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# Feto-Maternal Outcomes of Second Stage Caesarean Section at Pravara Rural Hospital, Loni

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**Abstract:** ***Introduction: A Caesarean section performed during the second stage of labour carries significant consequences for both maternal and neonatal health as well as potential complications in subsequent pregnancies. Incidence of second stage caesarean section has increased from 0.9 to 2.2%.3 The Royal college of obstetricians and gynaecologists (RCOG) reports that approximately 6% of caesarean section for singleton pregnancies occur at full dilatation.4 Material and methods: This retrospective descriptive study, conducted at Pravara Rural Hospital at Loni, Maharashtra, aimed to analyze the feto - maternal outcomes of caesarean sections performed during the second stage of labor at term (37 weeks) in singleton pregnancies with cephalic presentation. The study included women who underwent caesarean delivery in the second stage of labor at term, while excluding those with multiple pregnancies, malpresentation, or preterm deliveries. The study was conducted over four months, from August to November 2024, involving patients admitted to the antenatal ward of the obstetrics and gynecology department. Total number of deliveries during this period were 3439 deliveries among which 1530 were caesarean deliveries. Results: As per the study, out of all women in whom cesarean section was performed in the second stage of labour (91) which is 5.94 % of the total caesarean deliveries (1530) performed during the study period, majority of women were in the age group of 20 - 25 years (54.9%), among which 78% of them were primiparous. Majority of the cases were labor induced (54.9%).76.9% of second stage caesarean sections performed were due to non descent of fetal head. Majority (57.1%) of the babies were delivered by vertex method. Most common intraoperative complication and postoperative complication was hematuria (40.7%).16.5 % of neonates experienced birth asphyxia. Most babies weighed in the range of 2.5 - 3.5 kg (90.1%). Conclusion: The study concluded to analyze the rate, risks of second - stage caesarean sections and their impact on pregnancy outcomes. Key precautions include proper surgical techniques, monitoring labor progression, and ensuring regular audits, training, and use of prophylactic measures to improve outcomes.***

**Keywords:** feto maternal, caesarean section, second stage, outcome

## 1. Introduction

A second - stage caesarean section occurs when a woman requires a cesarean delivery at full cervical dilation. This procedure is typically performed in cases where vaginal delivery is no longer possible or poses a risk to either the mother or the baby. The second stage of labor, which begins after full cervical dilation and continues until the baby is delivered, is critical in the delivery process. When a caesarean section is required at this stage, it can have significant implications for both maternal and neonatal outcomes.[1, 2] For example, the mother may face an increased risk of complications such as infections, haemorrhage, and prolonged recovery period.

Over recent years, the incidence of second - stage caesarean sections has been steadily increasing, rising from 0.9% to 2.2%.[3] According to the Royal College of Obstetricians and Gynaecologists (RCOG), about 6% of caesarean sections for singleton pregnancies occur at full cervical dilation, marking a significant portion of all cesarean deliveries.[4] This rise in the rate of second - stage caesarean sections can be attributed to several factors. There has been a marked improvement in the safety of the procedure, including advances in surgical techniques, better anesthesia, and more effective antibiotics. These improvements have reduced the risks associated with caesarean sections, making them a more viable option when needed.

The rise in second - stage caesarean sections reflects the broader trend of increased caesarean rates overall, influenced by medical, societal, and individual factors. As the procedure becomes safer and more accessible, it has become a more common solution to complicated labors, even at the critical second stage. However, while the safety of the procedure has improved, the decision to perform a second - stage caesarean must still be carefully weighed against the potential risks for both the mother and the baby.

### Objective

The objective of this study was to analyze the feto - maternal outcomes, rates and indications of caesarean sections performed during the second stage of labor at term gestation (37 weeks)

## 2. Material and Methods

This study was conducted at Pravara Rural Hospital, a tertiary healthcare centre at Loni, Maharashtra This is a retrospective study descriptive in nature conducted over a period of four months from August 2024 to November 2024 in women in whom caesarean section have been performed in the second stage of labour. The study population included those women who were admitted in antenatal ward or labour room of Obstetrics and Gynaecology Department for delivery.

**Inclusion Criteria**
Women with singleton pregnancy, cephalic presentation and term period of gestation in whom caesarean section was performed in the second stage of labour.

**Exclusion Criteria**
Women having multiple pregnancy, malpresentations and preterm gestation.

## 3. Results

**Table 1:** Distribution according to maternal demographic characteristics, (n=91)

| Demographic Characteristics | Total | Percentage (%) |
|---|---|---|
| Age (years) | | |
| Less than 20 | 6 | 6.6 |
| 20 - 25 | 50 | 54.9 |
| 26 - 30 | 31 | 34.1 |
| >30 | 4 | 4.4 |
| Gravida | | |
| Primigravida | 71 | 78 |
| Multigravida | 20 | 22 |

The majority of women are in the age group of 20 - 25 years (54.9%) and are primigravida (78%). A smaller percentage falls into the under 20 years (6.6%) and over 30 years (4.4%) age ranges, with 22% being multigravida.

**Table 2:** Type of labour, (n=91)

| Type of labour | Total | Percentage (%) |
|---|---|---|
| Spontaneous labour | 41 | 45.1 |
| Induced labour | 50 | 54.9 |

The study shows that 54.9% of women had induced labor, while 45.1% had spontaneous labor. This indicates a slightly higher proportion of induced labors in the study population.

**Table 3:** Indications for second stage caesarean section.

| Variables | Indications | Total | Percentage (%) |
|---|---|---|---|
| I | Non descent of head | 70 | 76.9 |
| I (A) | With fetal distress | 46 | 50.5 |
| Ii | Non reassuring fetal heart rate | 20 | 22 |
| Iii | Thick meconium stained liquor | 26 | 28.6 |
| I (B) | With caput succedaneum | 24 | 26.4 |
| II | Deep transverse arrest | 21 | 23.1 |

The study indicates that the most common reason for caesarean sections was non - descent of the head, accounting for 76.9% of cases. Other significant indications include fetal distress (50.5%), non - reassuring fetal heart rate (22%), thick meconium - stained liquor (28.6%), caput succedaneum (26.4%), and deep transverse arrest (23.1%). These variables highlight the various complications leading to the decision for a caesarean section during labor.

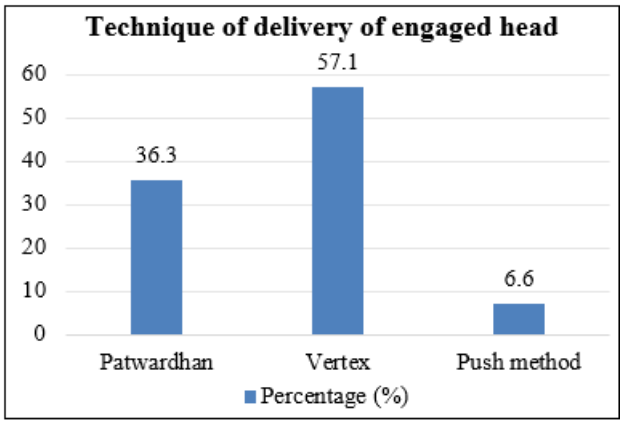


**Figure 1:** Technique of delivery of engaged head

The study reveals that the most commonly used technique was the vertex method, accounting for 57.1% of cases, followed by the Patwardhan technique at 36.3%. The push method was the least used, with only 6.6 % of cases dealt with this approach.

**Table 4:** Intraoperative complications

| Complications | Number | % |
|---|---|---|
| Uterine incision extension | 14 | 15.4 |
| Angle Hematoma | 4 | 4.4 |
| Hematuria | 37 | 40.7 |
| Blood Transfusion | 10 | 11 |

The study shows that the most common complication was hematuria, occurring in 40.7% of cases, followed by uterine incision extension in 15.4%. Blood transfusion was required in 11% of cases, and angle hematoma was observed in 4.4%. These complications highlight some of the risks associated with the procedures performed.

**Table 5:** Postoperative complications

| Complications | Number | % |
|---|---|---|
| Febrile illness | 13 | 14.3 |
| Wound infection | 7 | 7.7 |
| Wound Resuturing | 2 | 2.2 |
| Prolonged foleys catherization | 37 | 40.7 |
| Abdominal distension | 9 | 9.9 |
| Blood transfusion | 9 | 9.9 |

The study reports that the most common complication was prolonged Foley's catheterization, affecting 40.7% of cases. Febrile illness occurred in 14.3%, while wound infection and abdominal distension were seen in 7.7 % and 9.9 % of cases, respectively. Blood transfusion was required in 9.9 % of cases, and wound resuturing was necessary in 2.2 %. These complications reflect the various postoperative challenges.

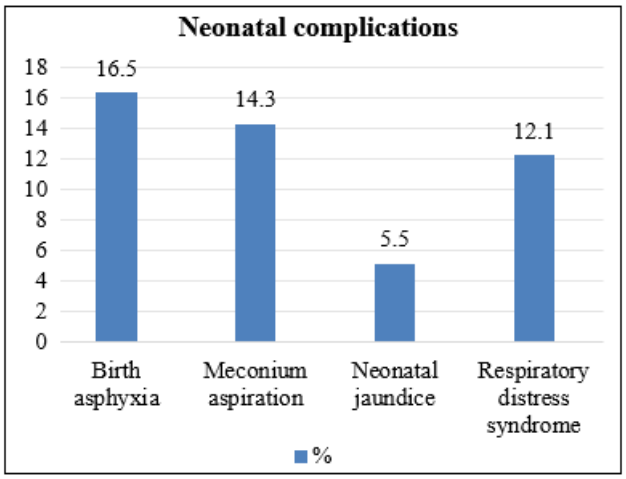


**Figure 2:** Neonatal complications

The study indicates that birth asphyxia was the most common neonatal complication, occurring in 16.5% of cases, followed by meconium aspiration in 14.3%. Respiratory distress syndrome was observed in 12.1% of cases, while neonatal jaundice occurred in 5.5%. These complications highlight some of the challenges faced by neonates following delivery.

**Table 6:** Baby birth weight distribution

| Birth weight (grams) | Total | % |
|---|---|---|
| 2500 | 4 | 4.4 |
| 2500 - 3000 | 82 | 90.1 |
| 3500 | 5 | 5.5 |

The study shows that the majority of newborns had a birth weight between 2500 - 3000 grams, accounting for 90.1% of cases. A smaller proportion had a birth weight of less than 2500 grams (4.4%), and 5.5% had a birth weight over 3500 grams.

## 4. Discussion

In our study period, the overall caesarean section rate was higher (44%) than international rates. (31.2% in UK and 31.7% in US) [1, 2.] The increased rate of caesarean sections in our hospital may be attributed to its role as a referral center, where high risk patients from neighboring districts are predominantly sent for operative deliveries.

Women delivered by caesarean section at full dilation have a higher risk of obstetric hemorrhage, bladder injury, extended uterine tear leading to broad ligament hematoma, infection and longer hospital stay.[5]

The most common maternal intra and post operative complication seen in our study was hematuria in 37 (40.7%) women as the bladder is advanced during the second stage of labour. Prolonged catheterization was done in 40 % cases post operatively. The 14 (15.4%) had extension of uterine incision which is slightly higher compared to the other studies.7 This could be due to a deeply impacted fetal head, accompanied by significant caput and molding, which makes the delivery of the fetal head more difficult. Febrile episodes were noted in 13 (14.3%) cases. The rate of requirement of blood transfusion was 9.9 % mainly due to anemia, and extension of uterine incision. In a similar study done by Babre et al and Gupta et al blood transfusion rate was 8.2% and 8% respectively.[6]

In our study maximum number of women 50 (54.9%) were in the age group of 20 to 25 years. In a similar study done by Gupta et al 46% women were in the age group of 21 to 30 years.8 Majority (78 %) of women were primigravida. Similar results were seen in the study done by Babre et al in which 74% of patients were primigravida and in another study done by Unterscheider et al in which 76.5% cases were nulliparous.[6, 10]

In our study, the most common indication for caesarean section during the second stage of labor was the non - descent of the fetal head, occurring in 70 cases (76.9%), often associated with fetal distress or caput succedaneum. In a study done by Bhargava et al, most common indication of caesarean section (77.34%) in second stage was non - descent of fetal head, out of which 21.87% were with non - reassuring fetal heart rate and 24.21% were with meconium - stained liquor.[9]

Babies born by cesarean section performed during the second stage of labor have 50% more chances to have perinatal asphyxia as compared to those born by cesarean section during the first stage of labour. In our study maximum numbers of babies born (82) were having birth weight between 2.5 - 3.5 kg. Out of 91 babies born, 45 (44.9%) were admitted to neonatal intensive care unit. In a similar study done by Gupta et al 44% babies were admitted to neonatal intensive care unit.6 In another study done by Babre et al 54.1% of babies were admitted to neonatal intensive care unit.[6, 8]

## 5. Conclusion

Obstetricians rely on their individual expertise, experience and judgement when navigating complex decisions during the second stage of labor. However, a significant knowledge gap exists due to the lack of randomized controlled trials providing clear guidance on whether to attempt a potentially challenging instrumental vaginal delivery or proceed with an immediate caesarean section when the cervix is fully dilated.

The WHO states that the Robson's classification of caesarean section helps with optimization of use of caesarean section, evaluation of methods intended to reduce the caesarean section rate, and ultimately improvement of clinical practices and quality of care in various healthcare settings.

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